

Canyon Lake

Canyon Lake is a 28-acre lake located on Rapid Creek on the southwest edge of Rapid City. Canyon Lake is a put and take trout lake. It gets stocked on a yearly basis with rainbow trout. The primary species in the lake are rainbow trout and brown trout. It is also home to a large population of white suckers.

Rainbow Trout. Canyon Lake is stocked every year with rainbow trout. 10,082 rainbow trout were stocked in 2023 with an average size of 15 inches. The 2023 survey had an average of 8 rainbow trout per gill net and 1.3 per trap net.

Brown Trout. Canyon Lake is home to a population of brown trout. The brown trout within the lake are residents of Rapid Creek. The 2023 surveys showed an average of 5 brown trout per gill net while the trap nets averaged 6 fish per net.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Canyon, Pennington County
RAP-Lake-3-000
2023

Lake Information

Name: Canyon
County: Pennington
Surface Area: 28 Acres

Surveys and Investigations

Survey methods used by gear type, date, and effort.

Gear	Date	Effort
AFS std gill net	Jun 27, 2023	1 net-nights
frame net (std 3/4 in)	Jun 27, 2023	4 net-nights

Common Fish Species Present

Rainbow Trout

White Sucker

Brown Trout

Terminology

Catch per unit effort (**CPUE**) refers to the relative abundance of a species. It is defined as the number of fish captured per unit of effort (i.e., number of fish captured per net-night or number of fish captured per hour electrofishing). In this report CPUE is typically given for only stock-length fish (see length categories table for stock lengths).

A statewide effort to help make netting efforts comparable to all waters sampled across the state, occurred in 2017, with a switch to American Fisheries Society gill nets. Past gill netting efforts were completed with different style/types of nets and are not comparable side by side.

- **AFS std gill net** – 80 ft experimental gill net containing eight panels (10 ft each) of varying monofilament meshes of 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25 and 2.50 inches.
- **std experimental gill net for non-Missouri River waters** - 150 ft experimental gill net containing six panels (25 ft each) of varying monofilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.
- **std experimental gill net for Missouri River reservoirs** – 300 ft experimental gill net containing six panels (50 ft each) of varying multifilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.

$$CPUE = \frac{\text{number of fish}}{\text{effort}}$$

Population size structure is quantified using the indices proportional size distribution of quality-length fish (**PSD**) and proportional size distribution of preferred-length fish (**PSD-P**). These indices indicate the proportion of stock-length fish that are equal to or greater than a given length. Minimum lengths for stock, quality and preferred length fish are given in the length categories table.

$$PSD = \left(\frac{\text{number of fish} \geq \text{quality length}}{\text{number of fish} \geq \text{stock length}} \right) \times 100$$

$$PSD - P = \left(\frac{\text{number of fish} \geq \text{preferred length}}{\text{number of fish} \geq \text{stock length}} \right) \times 100$$

Relative weight (**Wr**) is used to quantify fish plumpness. Relative weight is the ratio of what a fish weighs (**W**) compared to a length-specific standard weight (**Ws**) multiplied by 100. Relative weight values of 95-105 are commonly cited as optimum values, but values in the 80s are common during summer sampling in South Dakota.

$$Wr = \left(\frac{W}{W_s} \right) \times 100$$

Confidence intervals (CI) are provided for many of the estimates calculated in this report. The confidence interval provides a range in which the true mean is expected to fall. For example, with an 80% CI we are 80% confident that the interval contains the true value.

Length categories include stock (S), quality (Q), preferred (P), memorable (M) and trophy (T). Length categories for most species have been defined based on a percentage of the world record length for that species. Some species mentioned in this report do not have defined length categories. Length categories for species used in this report are provided in the following table. Measurements are the minimum total length for each category and are reported in inches (in) and centimeters (cm).

Species Name	Stock		Quality		Preferred		Memorable		Trophy	
	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)
Black Bullhead	6	15	9	23	12	30	15	38	18	46
Black Crappie	5	13	8	20	10	25	12	30	15	38
Bluegill	3	8	6	15	8	20	10	25	12	30
Brown Trout	8	20	12	30	16	40	20	50	18	46
Channel Catfish	11	28	16	41	24	61	28	71	36	91
Freshwater Drum	8	20	12	30	15	38	20	51	25	63
Lake Trout	12	30	20	50	26	65	31	80	39	100
Largemouth Bass	8	20	12	30	15	38	20	51	25	63
Muskellunge	20	51	30	76	38	97	42	107	50	127
Northern Pike	14	35	21	53	28	71	34	86	44	112
Pumpkinseed	3	8	6	15	8	20	10	25	12	30
Rainbow Trout	10	25	16	40	20	50	26	65	31	80
Rudd	6	15	10	25	12	30	15	38	19	48
Sauger	8	20	12	30	15	38	20	51	25	63
Smallmouth Bass	7	18	11	28	14	35	17	43	20	51
Walleye	10	25	15	38	20	51	25	63	30	76
White Bass	6	15	9	23	12	30	15	38	18	46
White Crappie	5	13	8	20	10	25	12	30	15	38
Yellow Bullhead	4	10	7	18	9	23	11	28	14	36
Yellow Perch	5	13	8	20	10	25	12	30	15	38

Catch Summary of Stock Length Fish

Catch per unit effort (CPUE), proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) for species sampled in survey with 80% confidence interval (CI-80).

* **Methods/Species that ignore stock length**

Gear	Species	Sample Size (n)	Abundance		Stock Density Indices			Condition		
			CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
AFS std gill net	Brown Trout	5	5.0		100		20		76	2
	Rainbow Trout	9	8.0		50		13		99	7
	White Sucker	54	54.0		94		74	9	93	1
frame net (std 3/4 in)	Brown Trout	6	1.5	1.4	100		33		77	5
	Rainbow Trout	5	1.3	1.2	40		0		89	6
	White Sucker	2380	595.0	153.2	84	1	43	1	88	1

10-Year Catch Per Unit Effort by Gear and Species

Catch per unit effort (CPUE) and average (Avg) of species across 10 years using different gear types.

* **Methods/Species that ignore stock length**

Gear	Species	CPUE										Avg
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
AFS std gill net	Brown Trout										5.0	5.00
	Rainbow Trout										8.0	8.00
	White Sucker										54.0	54.00
frame net (std 3/4 in)	Black Bullhead			0.5							0.0	0.25
	Brown Trout			0.3							1.5	0.90
	Rainbow Trout			0.3							1.3	0.80
	White Sucker			22.5							595.0	308.7 5

10-Year Size Structure and Condition Statistics by Gear and Species

Species proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) collected by different gear types across 10 years.

Gear	Species	Index	Year										
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
AFS std gill net	Brown Trout	PSD											100
		PSD-P											20
		Wr											76
	Rainbow Trout	PSD											50
		PSD-P											13
		Wr											99
	White Sucker	PSD											94
		PSD-P											74
		Wr											93
frame net (std 3/4 in)	Brown Trout	PSD			100								100
		PSD-P			0								33
		Wr			73								77
	Rainbow Trout	PSD			0								40
		PSD-P			0								0
		Wr			66								89
	White Sucker	PSD			37								84
		PSD-P			30								43
		Wr			95								88

Fish Condition

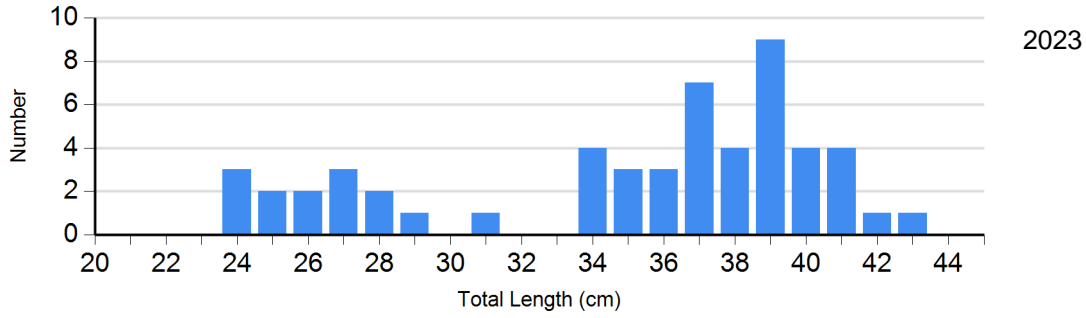
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Brown Trout Gill Net	2023	0		4	75 (1.1)	1	82	0	
Rainbow Trout Gill Net	2023	4	97 (6.4)	3	94 (9.2)	0		1	120
White Sucker Gill Net	2023	3	93 (0.9)	11	93 (1.5)	34	92 (0.8)	6	95 (2.0)

Length Frequency Distribution

Length frequency histogram of species sampled by year.

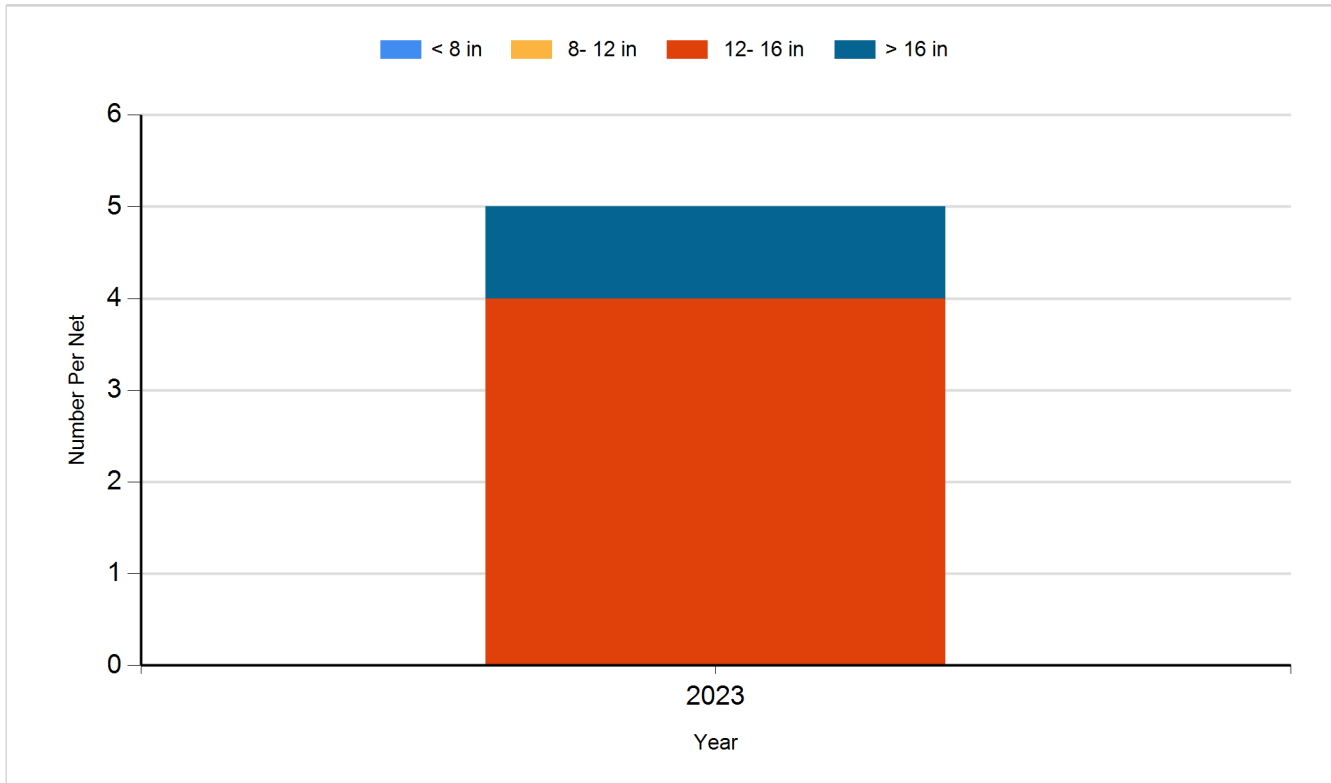
Species: White Sucker
Gear: AFS std gill net



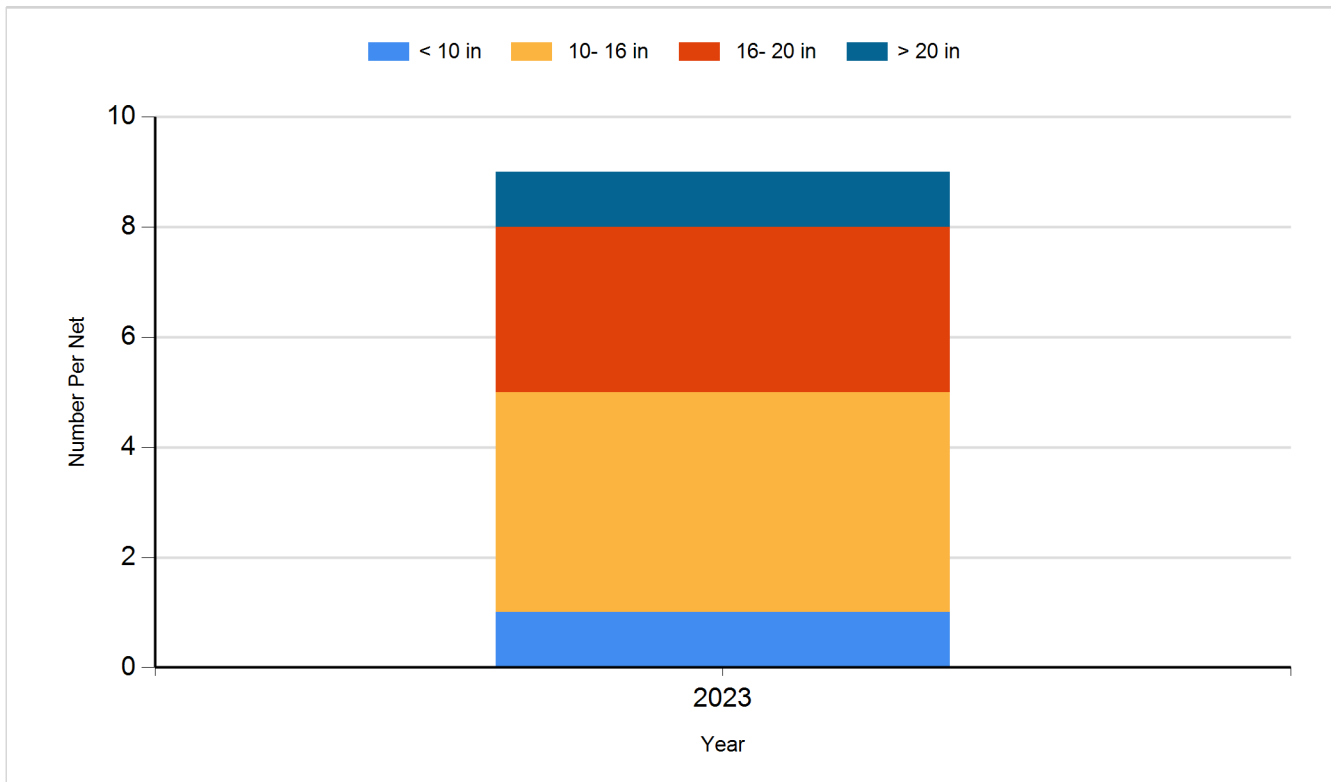
Historic Fish Sizes and Relative Abundance

Size distribution per net by color for species sampled by year.

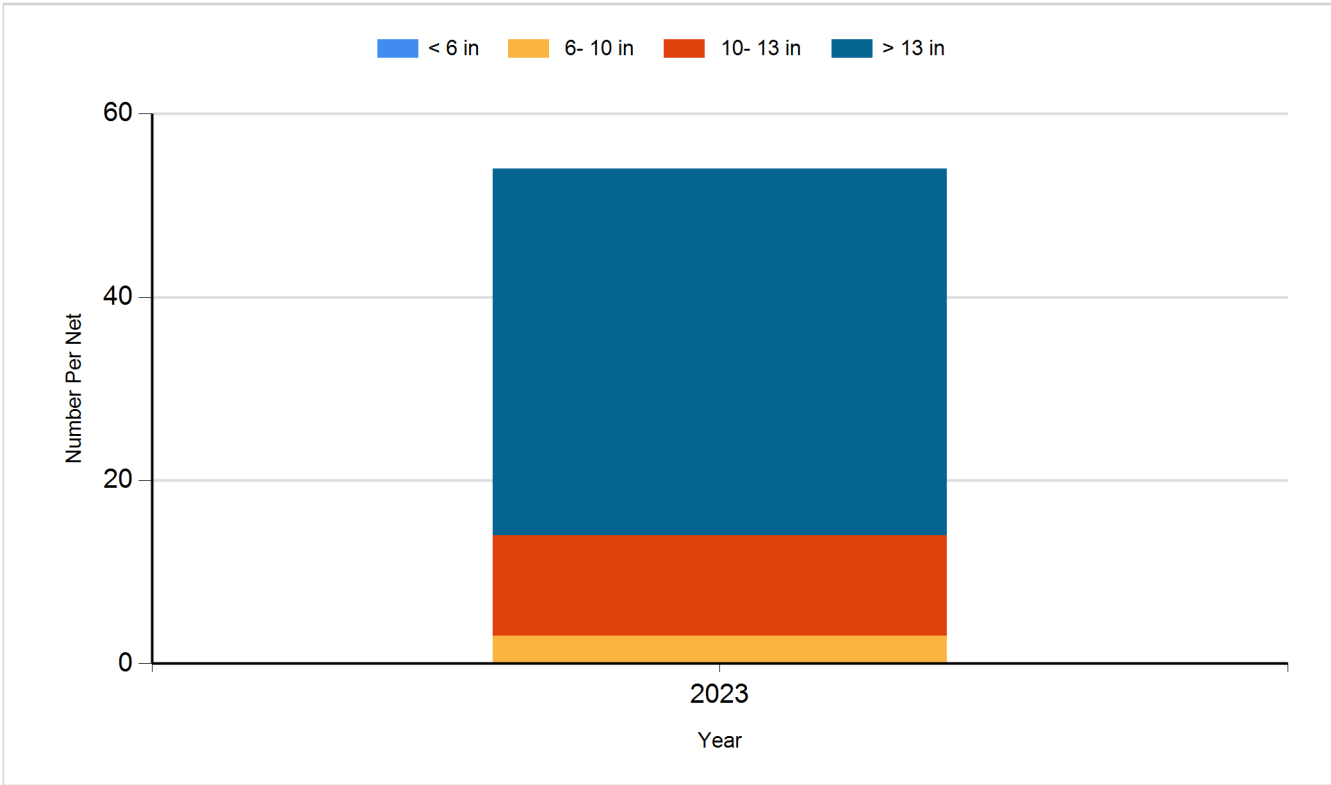
Species: Brown Trout
Gear: AFS std gill net



Species: Rainbow Trout
Gear: AFS std gill net



Species: White Sucker
Gear: AFS std gill net



Fish Stocking

Number of fish stocked by year, species, and size.

Year	Species	Size	Number
2012	Rainbow Trout (Erwin x Arlee)	Catchable	2,700
2012	Rainbow Trout (Erwin x Arlee)	Catchable 15"	410
2012	Rainbow Trout (Shasta)	Catchable	5,449
2012	Rainbow Trout (Shasta)	Catchable 11"	540
2013	Rainbow Trout (Erwin x Arlee)	Catchable	2,400
2013	Rainbow Trout (Erwin x Arlee)	Catchable 15"	370
2013	Rainbow Trout (Shasta)	Catchable	4,680
2014	Rainbow Trout (Erwin x Arlee)	Catchable	1,522
2014	Rainbow Trout (Erwin x Arlee)	Catchable 15"	340
2014	Rainbow Trout (Shasta)	Catchable	5,288
2015	Rainbow Trout (Erwin x Arlee)	Catchable	2,820
2015	Rainbow Trout (Erwin x Arlee)	Catchable 15"	500
2015	Rainbow Trout (Shasta)	Catchable	6,780
2016	Rainbow Trout (Erwin x Arlee)	Catchable	2,160
2016	Rainbow Trout (Erwin x Arlee)	Catchable 15"	435
2016	Rainbow Trout (Shasta)	Catchable	7,320
2017	Rainbow Trout (Eagle Lake)	Catchable	1,620
2017	Rainbow Trout (Erwin x Arlee)	Catchable	5,580
2017	Rainbow Trout (Erwin x Arlee)	Catchable 15"	150
2017	Rainbow Trout (Shasta)	Catchable	2,280
2017	Rainbow Trout (Shasta)	Catchable 15"	150
2018	Rainbow Trout (Erwin x Arlee)	Catchable 11"	1,045
2018	Rainbow Trout (Shasta)	Catchable	3,000
2018	Rainbow Trout (Shasta)	Catchable 11"	4,860
2018	Rainbow Trout (Shasta)	Catchable 15"	335
2019	Rainbow Trout (Erwin x Arlee)	Catchable 11"	4,620
2019	Rainbow Trout (Shasta)	Catchable 11"	6,216
2019	Rainbow Trout (Shasta)	Catchable 15"	150
2020	Rainbow Trout (Arlee)	Catchable 11"	8,544
2020	Rainbow Trout (Arlee)	Catchable 15"	150
2020	Rainbow Trout (Shasta)		336
2020	Rainbow Trout (Shasta)	Catchable 11"	2,960
2021	Rainbow Trout (Arlee)	Adult	2,700
2021	Rainbow Trout (Arlee)	Catchable 11"	3,257
2021	Rainbow Trout (Arlee)	Catchable 15"	150
2021	Rainbow Trout (Shasta)	Adult	3,450

2021	Rainbow Trout (Shasta)	Catchable 11"	243
2021	Rainbow Trout (Shasta)	Juvenile	1,500
2022	Rainbow Trout (Shasta)	Adult	5,850
2022	Rainbow Trout (Trout Lodge)	Adult	3,950
2023	Rainbow Trout	Adult	6,099
2023	Rainbow Trout (Trout Lodge)	Adult	3,983
